

1 N.C. 71843

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3 CLOSED CYCLE BRAYTON PROPULSION SYSTEM

4 WITH DIRECT HEAT TRANSFER

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6 ABSTRACT OF THE DISCLOSURE

7 A liquid metal fueled Brayton cycle power system with a
8 direct contact heat exchanger. In this invention, a compressor
9 compresses the working gas. A regenerator preheats the
10 compressed working gas and passes the working gas to a
11 reactor/storage tank with liquid metal fuel stored therein. An
12 oxidant is injected into the reactor/storage tank to react with
13 the liquid metal fuel. The compressed working gas bubbles
14 through the liquid metal fuel in the reactor/storage tank and is
15 heated by direct contact with the fuel-oxidant mixture. A
16 turbine expands the heated working gas and thereby withdraws
17 power from the system. The spent working gas exits to the
18 regenerator where it warms the compressed gas. A cooler reduces
19 the working gas temperature and recirculates the gas to the
20 compressor.